

### Claims

What is claimed is:

1. A method of compacting a base material, comprising the steps of:

moving a compactor over the base material;

gathering quality control compaction data for the base material at least in part by quantifying a sinkage deformation interaction between the base material and the compactor; and

determining compaction quality assurance data from the quality control compaction data.

2. The method of claim 1 wherein the quantifying step includes at least one of:

determining data indicative of an effective roller radius of the compactor;

measuring an energy interaction between the compactor and the base material; and

measuring a rut depth in the base material caused by the compactor.

3. The method of claim 2 wherein the gathering step includes first quality control compaction data at least in part by reading a first set of sensors; and

the method including the step of gathering second compaction quality control data at least in part by reading a second set of sensors.

4. The method of claim 3 including a step of merging the first compaction quality control data and the second compaction quality control data.

5. The method of claim 1 including a step of providing the compaction quality assurance data to a third party inspector.

6. The method of claim 1 wherein the compaction quality assurance data includes data indicative of at least one of;

- a proof rolling test result;
- a walk out test result;
- a penetrometer test result;
- a base material density test result; and
- compactor sinkage into the base material.

7. The method of claim 1 wherein the determining step includes a step of determining the compaction quality assurance data for a predetermined area of the base material.

8. The method of claim 1 including a step of linking at least one of the quality control compaction data and the quality assurance compaction data to compactor position data.

9. The method of claim 1 wherein the determining step is performed in real time with the moving step.

10. The method of claim 1 including a step of displaying at least one of the compaction quality control data and compaction quality assurance data during the moving step.

11. A compactor comprising:

- a chassis;
- a roller rotatably attached to said chassis;

a computer carried by said chassis, and including a compaction quality control algorithm and a compaction quality assurance algorithm;

said compaction quality control algorithm including means for quantifying a sinkage deformation interaction between the base material and the compactor; and

said compaction quality assurance algorithm using data from said compaction quality control algorithm.

12. The compactor of claim 11 wherein at least one of said compaction quality control algorithm and said compaction quality assurance algorithm includes a compactor sinkage determination algorithm.

13. The compactor of claim 11 wherein said interaction includes at least one of:

an effective roller radius of said compactor,

an energy interaction between said compactor and the base material, and

a rut depth in the base material caused by said compactor.

14. The compactor of claim 13 including a first set of sensors carried by said chassis and being associated with a first compaction quality control algorithm; and

a second set of sensors carried by said chassis and being associated with a second compaction quality control algorithm included with said computer.

15. The compactor of claim 14 wherein said computer includes a compaction data merging algorithm that uses data from said first compaction quality control algorithm and said second compaction quality control algorithm.

16. The compactor of claim 11 including means for delivering compaction quality assurance data produced by said compaction quality assurance algorithm to a third party inspector.

17. The compactor of claim 11 wherein said compaction quality assurance algorithm produces data indicative of at least one of:

- a proof rolling test result;
- a walk out test result;
- a penetrometer test result;
- a base material density test result; and
- compactor sinkage into the base material.

18. The compactor of claim 17 wherein said data encompasses a predetermined area of said base material.

19. The compactor of claim 11 wherein at least one of said compaction quality control algorithm and said compaction quality assurance algorithm is linked to a compactor position determination algorithm.

20. The compactor of claim 11 including a real time display of at least one of compaction quality control data and compaction quality assurance data.